

THE MALE OF *PLATYPATROBUS LACUSTRIS*
DARLINGTON (COLEOPTERA: CARABIDAE)*

BY CARL H. LINDROTH
Zoological Institute, University of Lund, Sweden

The discovery of a new genus among the Patrobini from Lake Superior (Darlington, 1938) was most unexpected. It was founded on a single female from Batchawaung Bay, Ontario, in the Leconte collection in the Museum of Comparative Zoology at Harvard, and, in the absence of a male, the author hesitated to state the true relationship of the new genus. This female is the only specimen of the genus *Platypatrobus* (species, *lacustris* Darl.) heretofore known.

Quite recently, in September, 1961, Dr. Darlington and I visited the well-known coleopterist, Mr. C. A. Frost, Framingham, Mass., and, looking through his large collection, made the exciting discovery of a male of *Platypatrobus lacustris*, received by him from Dr. A. E. Brower. According to the label, the beetle had been taken at "black light," July 30th, a few years ago (exact year not stated) at Sinclair in northernmost Maine. Its capture in a light trap and its well developed hind-wings indicate that it is able to fly.

The new male, except for the two dilated basal segments of the pro-tarsi, matches the type completely. The extra setae on prothorax and elytra are considerably irregular in number and position: laterally on the prothorax are 3 (left) and 4 (right) (in the type 4 + 3) setae; on the elytra, 1st interval, 2 + 2 (type 1 + 2), 3rd interval, 12 + approximately 9 (type 11 + 12), 5th interval, 10 + 8 (type 5 + 6).

I was allowed to borrow the specimen and have dissected the genitalia (fig. 1). The *parameres* are of the normal Patrobine type, almost identical with those of the two related genera, *Patrobus* and *Diplous* (*Platidius*), that is, approximately symmetric with long, narrow apical prolongations bearing 4 setae at tip. The accessory subapical setae are inconspicuous, only 2 in number, and there is no suggestion of the hairy membrane externally that is characteristic of the *septentrionis* group of *Patrobus*.

The *penis* (median lobe) is non-sclerotized dorsally, as in *Patrobus* and *Diplous*, but not entirely open, as in *Deltomerus*, *Platidiolus* (*Patroboidea*), and related genera. The hook-shaped basal part is a common feature of all Patrobini. The apex is long and slender as

*Manuscript received by the editor October 26, 1961.

in *Patrobis longicornis* and *foveocollis*, but without the subapical left side tooth of *longicornis* and, compared with *foveocollis*, symmetric. The shape of the apex, however, generally has little generic value in carabid beetles.

The *internal sac* of the penis is less complicated than in most *Patrobis*. The "apical plate" (Darlington; "Manschette", Kühnelt, 1941), forming the bottom (anterior part) of the eversible sac when in repose, is slightly spiral, but not at all to the extent of the *sibiricus* group of *Diplous* (Kühnelt). It is not prolonged into a spine, as in the North American *Diplous* (contrasted with the Siberian repre-

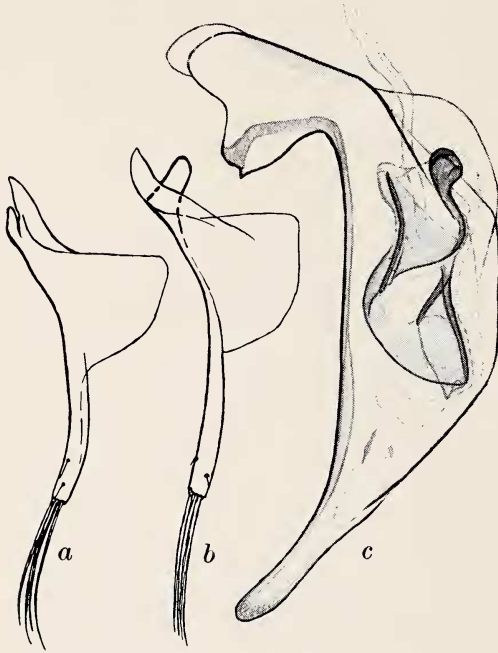


Fig. 1. *Platypatrobis lacustris* Darl. Penis (c) and parameres (a, right; b, left). The dark parts of the internal sac are not isolated sclerites but thickened margins of lamellae.

sentatives of the genus). It lacks accessory spine(s), in contrast to *Patrobis*. Presence of spines was used as a generic character of *Patrobis* by Darlington, but there is no spine in the Palaearctic *P. assimilis* Chd.

The most characteristic feature in the internal sac of *Platypatrobis* is the dorso-basal part of the "apical plate", which protrudes into

the softwalled section of the dorsum. In side view it resembles a stalked button, but in dorsal view it is revealed as the side-face of a horizontal though somewhat elevated and irregular lamella with thickened margin. It seems to have no direct counterpart in any species of *Patrobis* or *Diplous*.

In summary, the male genitalia of *Platypatrobis* provide no clue to its taxonomic relationship with its two closest relatives, *Patrobis* and *Diplous*. The intrageneric variation of the internal sac is so great in both genera that no single consistently separating detail could be discovered. And the male genitalia of *Platypatrobis* itself show little peculiarity. Possibly, the general simplicity of the internal sac, with complete lack of spine-like sclerites, could be regarded as a sign of primitive organization. But it should be remembered that the same applies to the *depressus* group of *Diplous* (Kühnelt, 1941) as well as to *Patrobis assimilis*.

The taxonomic position of genus *Platypatrobis*, therefore, has still to be judged on external characters. In these, the genus is clearly closer to *Patrobis* than to *Diplous*. This is shown by the protruding eyes and the strongly constricted neck, as well as by several structural details of the prothorax: the central furrow is deepened at base; the basal foveae are deep and well defined; the front margin is strongly elevated (almost as in *P. longicornis*), delimited basad by a deep transverse impression which is coarsely punctured (as in *P. septentrionis*) and prolonged laterally to front-angles as an engraved line (as in *P. longicornis*, *septentrionis*, and *foveocollis*). However, as in *Diplous*, there is no defined latero-basal carinula inside the hind angles.

There are also good characters separating *Patrobis* and *Diplous* in the marginal region of the elytra¹, not observed by earlier students (Darlington, 1938; Kühnelt, 1941; Lindroth, 1961): (1) the raised lateral bead is complete to apex in *Patrobis*, rather suddenly disappearing well before apex in *Diplous*²; (2) the 9th stria is better developed in *Diplous*, still evident at the level of the meso-coxae, whereas in *Patrobis* it disappears anteriorly well behind this point; (3) the marginal row of setiferous punctures (on 9th interval) is almost continuous in *Diplous*, consisting of about 20 (19-24) punctures, whereas in *Patrobis* it is \pm interrupted at middle and the number of punctures is reduced (8-14). Jeannel (1941, p. 565ff)

¹Studied in the North American and (*Patrobis*) Scandinavian representatives of the two genera.

²This, however, is not quite constant in *Diplous*. An apparently undescribed species from the Kolyma River district, E. Siberia (V. N. Kurnakov), has the elytra margined to apex.

has used the last character as the main distinction between the "sub-families" *Deltomeritae* (represented in North America by genus *Platidiolus*, syn. *Patroboidea*) and *Patrobitae*, in spite of the fact that *Diplous* is referred to the latter group which he defines as having constantly 8 setiferous punctures! In the three points mentioned above (1-3), *Platypatrobis* agrees with *Patrobis* in points 1 and 2 but is intermediate in point 3, the marginal row consisting of 16 punctures on each side in the male investigated and being less interrupted at middle than in *Patrobis*.

Platypatrobis, though generically distinct, is closely allied to *Patrobis* and no "missing link" to *Diplous*. Its extreme rarity and restricted distribution undoubtedly give the impression of a relict, on the verge of extinction. On the other hand, it does not seem possible to tell whether *Platypatrobis* is the phylogenetically older genus. It should perhaps be regarded as "more simple" in general construction (lack of prothorax carinula, nearly continuous marginal row of setiferous punctures of elytra, simple internal sac of penis), but evolution sometimes goes toward simplification. How often is it actually defensible to state, without fossil evidence, what is "primitive" and what "derivative"?

LITERATURE CITED

- DARLINGTON, P. J., JR.
1938. The American Patrobini (Coleoptera, Carabidae). *Entomologica Americana* (Brooklyn) (new series), 18:135-183.
- JEANNEL, R.
1941. Coléoptères Carabiques, 1. Faune de France (Paris), 39:1-571.
- KÜHNELT, W.
1941. Revision der Laufkäfergattungen *Patrobis* und *Diplous*. *Ann. Naturh. Mus. (Wien)*, 51:151-192.
- LINDROTH, C. H.
1961. The Ground-Beetles (Carabidae, excl. Cicindelinae) of Canada and Alaska, 2. *Opusc. Ent. (Lund)*, Suppl. XX: 1-200.